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PATENT APPLICATION
Docket No. 14374.54

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

RCE AND ‘SUBMISSION’ PURSUANT TO 37 CFR 1.114

**Mail Stop: RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**

Sir:

In the interest of advancing the prosecution of this case, Applicant has submitted herewith a Request for Continued Examination, and a Submission pursuant to 37 CFR 1.114, namely, an Amendment responsive to the Office Action mailed April 5, 2006 (the "Office Action"). Reconsideration is respectfully requested in view of the following amendments and remarks:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper; and

Remarks begin on page 6 of this paper.

AMENDMENTS TO THE CLAIMS

Please cancel claim 16 amend claim 11, and add new claim 34. Claims 1, 2, 12-14, 18-24, and 26-29 were canceled in previous papers. No new matter is believed to be introduced by new claim 34 or by the amendment to claim 11. The following listing of claims will replace all prior versions and listings of claims in the application.

1-2. **(Cancelled)**

3. **(Previously Presented)** An x-ray tube comprising:
 - (a) a vacuum enclosure;
 - (b) a filament and a cathode cup including two walls which cooperate to at least partially define a slot wherein the filament is at least partially disposed, a distance between the filament and the at least one wall varying along at least a portion of the longitudinal length of the filament, and the distance between said filament and at least one of the at least two walls being at a minimum proximate a middle portion of the filament; and
 - (c) an anode positioned within the vacuum enclosure so as receive electrons emitted by the filament.
4. **(Previously Presented)** The x-ray tube as recited in Claim 3, wherein the distance between the filament and at least one of the at least two walls is at a maximum proximate at least one end portion of the filament.
5. **(Previously Presented)** The x-ray tube as recited in Claim 3, wherein the at least two walls of the slot are of substantially the same shape and are symmetrically disposed with respect to the filament.
6. **(Previously Presented)** An x-ray tube as defined in Claim 3, wherein the slot further comprises a bottom surface, and wherein the at least two walls are perpendicularly disposed with respect to the bottom surface.
7. **(Previously Presented)** The x-ray tube as recited in Claim 3, wherein the slot defines a cross-section having a least two different widths.

8. **(Previously Presented)** The x-ray tube as recited in Claim 3, wherein the filament is configured such that at least one of the properties of the filament varies along at least a portion of a longitudinal length of the filament, wherein the properties of the filament are selected from the group consisting of: filament wire diameter, pitch, filament diameter.

9. **(Previously Presented)** The x-ray tube as recited in Claim 3, wherein the slot has a cross sectional area that varies along at least a portion of a length of the slot.

10. **(Previously Presented)** The x-ray tube as recited in claim 3, wherein an emission profile associated with the filament is such that a density of emitted electrons per unit area is substantially uniform throughout a predefined plane through which a substantial portion of the emitted electrons pass.

11. **(Currently amended)** A cathode assembly suitable for use in an x-ray device, the cathode assembly comprising:

- (a) a base portion;
- (b) a cathode cup attached to the base portion, the cathode cup including at least two walls which cooperate to at least partially define a slot; and
- (c) a filament disposed substantially within the slot, the filament taking one of the following forms:

a helically wound wire configured such that a diameter of the filament varies along a longitudinal axis defined by the filament, the variances in diameter being substantially symmetrically arranged with respect to a predetermined location on the longitudinal axis;

~~a helically wound wire whose pitch varies along a longitudinal axis defined by the filament, the variances in pitch being substantially symmetrically arranged with respect to a predetermined location on the longitudinal axis; and~~

a helically wound wire whose diameter varies along a longitudinal axis defined by the filament, the variances in diameter being substantially symmetrically arranged with respect to a predetermined location on the longitudinal axis.

12-14. **(Canceled)**

15. **(Original)** The cathode assembly as recited in claim 11, wherein the slot at least partially defined by the walls of the cathode cup has a cross sectional area that varies along at least a portion of a length of the slot.

16. **(Canceled)**

17. **(Previously Presented)** In an x-ray tube having a filament of predetermined longitudinal length, a method for producing an electron stream having a predetermined electron density profile, the method comprising:

- (a) applying a predetermined electric current to the filament so as to cause emission of electrons by the filament;
- (b) varying, with respect to the longitudinal length of the filament, the rate at which electrons are emitted by the filament, the varying of the rate at which electrons are emitted by the filament being implemented by performing one of:
 - varying an electrical field strength in selected areas proximate the filament; and
 - heating the filament in such a way that some portions of the filament are at a relatively higher temperature than other portions of the filament; and
- (c) accelerating at least some of the emitted electrons toward a focal spot located at a predetermined distance from the filament.

18-24. **(Canceled)**

25. **(Original)** A filament, comprising:

- (a) a wire wound into successive coils to form a helix, the helix comprising a middle portion and first and second end portions, wherein at least one of a group of properties varies along at least a portion of a longitudinal length of the filament, the group of properties consisting of: wire diameter, pitch, filament diameter and wherein the wire diameter is greatest in the middle portion of the helix; and
- (b) first and second electrical leads, the first electrical lead being attached to the first end portion of the helix, and the second electrical lead being attached to the second end portion of the helix.

26-29. **(Canceled)**

30. **(Previously Presented)** The x-ray tube as recited in claim 3, wherein the filament defines a plurality of pitches.

31. **(Previously Presented)** The x-ray tube as recited in claim 3, wherein the slot has first and second ends, the slot being wider at the first end than at the second end.

32. **(Previously Presented)** The x-ray tube as recited in claim 3, wherein the slot has first and second ends, the slot having substantially the same width at the first and second ends.

33. **(Previously Presented)** The cathode assembly as recited in claim 11, wherein the predetermined location comprises a location proximate a center of the filament.

34. **(New)** The filament as recited in claim 25, wherein the filament comprises an element of a cathode assembly that includes:

a base portion; and

a cathode cup attached to the base portion, the cathode cup including two walls which cooperate to at least partially define a slot, the filament being at least partially disposed within the slot, and the slot having one of the following configurations:

the slot having a substantially constant cross-sectional area along a length of the slot; and

the slot having a cross-sectional area that varies along a portion of the length of the slot.

REMARKS

This paper is presented in response to the Office Action. By this paper, claim 16 is canceled, claim 11 is amended and new claim 34 is added. Claims 1, 2, 12-14, 18-24, and 26-29 were canceled in previous papers. Claims 3-11, 15, 17, 25, and 30-34 are now pending in view of the aforementioned cancellation.

Reconsideration of the application is respectfully requested in view of the aforementioned amendments to the claims and the following remarks. For the convenience and reference of the Examiner, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

I. General Considerations

Applicant notes that the remarks, or lack of remarks, set forth herein are not intended to constitute, and should not be construed as an acquiescence, on the part of the Applicant: as to the purported teachings or prior art status of the cited references; as to the characterization of the cited references advanced by the Examiner; or as to any other assertions, allegations or characterizations made by the Examiner at any time in this case. Applicant reserves the right to challenge the purported teaching and prior art status of the cited references at any appropriate time.

II. Rejection of Claim 17 under 35 U.S.C. § 102

Applicant respectfully notes that a claim is anticipated under 35 U.S.C. § 102(a), (b), or (e) only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Further, the identical invention must be shown in as complete detail as is contained in the claim. Finally, the elements must be arranged as required by the claim. *MPEP* § 2131.

The Examiner has rejected claim 17 under 35 U.S.C. § 102(b) as being anticipated by French Patent No. 2699326 to Christine ("Christine"). Applicant respectfully disagrees.

Applicant notes that *Christine* is a French patent written in the French language. With respect to such foreign language documents, Applicant notes that "If the document is in a language other than English and the examiner seeks to rely on that document, a translation must be obtained so that the record is clear as to the precise facts the examiner is relying upon in support of the rejection." *MPEP* § 706.02(II). *Emphasis added.* While it appears that the Examiner has attempted to comply with this requirement, Applicant respectfully submits the translation provided in connection with the Office Action falls short of fulfilling the intent of the aforementioned examination guidelines.

Specifically, the translated text provided by the Examiner consists of a single run-on paragraph that is four pages long. The translated text contains a large number of grammatical and syntactical errors

that make reading and understanding the text difficult. Not surprisingly, the Alta Vista – Babel Fish text translation utility that was used to produce the translation warns users that : “Expect Babel Fish to allow you to grasp the general intent of the original, not to produce a polished translation.” See http://www.altavista.com/help/babelfish/babel_help. *Emphasis added.* A true and correct copy of this warning is submitted herewith. Applicant respectfully submits that such a generalized translation clearly cannot, and should not, be relied upon in an attempt to make the record “clear as to the precise facts the examiner is relying upon in support of the rejection.” *Id.*

The use of the *Christine* translation as a basis for the rejection of claim 17 is problematic for other reasons as well. By way of example, in the rejection of claim 17, the Examiner has alleged that *Christine* discloses the recited limitations at “Page 1, lines 6-21” and “Page 5, lines 8-22.” However, it is unclear whether the sections cited by the Examiner refer to the original French version or to the translated English version of *Christine*. In this regard, Applicant notes that the English translation includes five pages, namely, a four page specification and a fifth page that includes six claims. While the Examiner has referred to “Page 5” in the rejection, Applicant notes that page 5 of the translation concerns an apparatus claim, while claim 17 is a method claim. Thus, inasmuch as the claims on page 5 of the translation do not recite any methods or processes, it would appear that the Examiner may be citing not to page 5 of the translation, but to page 5 of the original French version of *Christine*, although Applicant is not clear on this point.

If, in fact, the Examiner is referring to page 5 of the original French, Applicant is at a loss to respond to the rejection, since the correlation between the line and page numbers of the French text with the pages of the translation is not apparent. Thus, Applicant is left to guess at which portion of the *Christine* translation purportedly provides the basis for the rejection. This much Applicant also respectfully declines to do, at least because it is the Examiner who bears the burden of establishing anticipation. On the other hand, if the Examiner is referring to “Page 5, lines 8-22” of the translation, the cited passage provides no support for the rejection of method claim 17 since, as noted above, page 5 of the translation is concerned with a series of apparatus claims that recite no method steps, acts or processes.

Because the English translation of *Christine* provided by the Examiner does not comport with the standards for translations set forth in the examination guidelines, and because the Examiner does not appear, in any event, to have specifically identified what portion(s) of the English translation of *Christine* the Examiner believes to correspond to the elements of the claimed invention, Applicant respectfully submits that the Examiner has not established that the identical invention is shown in *Christine* in as complete detail as is contained in claim 17.

In light of the foregoing, Applicant respectfully submits that the Examiner has failed to establish that *Christine* anticipates claim 17, and Applicant thus further submits that the rejection of claim 17 should be withdrawn.

III. Rejection of Claim 11 and 33 under 35 U.S.C. § 103

Applicant respectfully notes at the outset that in order to establish a *prima facie* case of obviousness, it is the burden of the Examiner to demonstrate that three criteria are met: first, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; second, there must be a reasonable expectation of success; and third, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *MPEP* § 2143.

The Examiner has rejected claims 11 and 33 under 35 U.S.C. § 103(a) as being unpatentable over *Christine* in view of U.S. Patent No. 5,623,530 to Lu ("Lu"). Applicant respectfully disagrees but submits that in light of the amendment herein to claim 11, the rejection is moot.

Particularly, claim 11 has been amended to delete the recitation of "... a helically wound wire whose pitch varies along a longitudinal axis defined by the filament, the variances in pitch being substantially symmetrically arranged with respect to a predetermined location on the longitudinal axis ..." Inasmuch as the Examiner has not established that the cited references teach or suggest the subject matter to which amended claim 11 is directed, Applicant submits that the rejection of claims 11 and 33 should be withdrawn.

IV. Allowable Subject Matter

Applicant acknowledges with thanks the indication of the Examiner that claims 3-10, 25, and 30-32 are allowed, and Applicant also wishes to thank the Examiner for the careful review of those claims.

The Examiner has indicated that claims 15 and 16 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In light of the discussion and claim amendment presented herein, Applicant respectfully declines to amend claims 15 and 16 at this time.

Applicant submits the following comments concerning the Examiner's statements of reasons for the indication of allowable subject matter in the Office Action. In general, Applicant agrees with the Examiner that the inventions to which claims 3-10, 15, 16, 25, and 30-32 are respectively directed are patentable over the cited references, but respectfully disagrees with the Examiner's statement of reasons for allowance as set forth in the Office Action.

Particularly, Applicant submits that it is improper to characterize a single limitation, or subset of limitations, as constituting the basis for allowance of a claim. Rather, the patentability of a claim is properly determined with reference to the claim as a whole. Accordingly, Applicant does not concede that the reasons for allowable subject matter given by the Examiner are the only reasons that make, or would make, the claim allowable and Applicant does not make any admission or concession concerning the Examiner's statements in the Office Action concerning the allowability of claims 3-10, 15, 16, 25, and 30-32 in view of the cited references.

V. New Dependent Claim 34

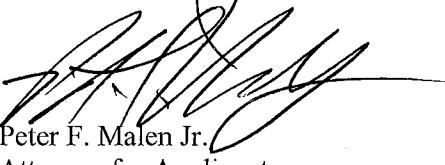
By this paper, Applicant has added new dependent claim 34. Inasmuch as new claim 34 depends from claim 25, indicated by the Examiner to be in allowable condition, Applicant respectfully submits that claim 34 is likewise in allowable condition.

CONCLUSION

In view of the remarks submitted herein, Applicant respectfully submits that each of the pending claims 3-11, 15, 17, 25, and 30-34 in this application is in condition for allowance. Therefore, reconsideration of the rejections is requested and allowance of those claims is respectfully solicited. In the event that the Examiner finds any remaining impediment to a prompt allowance of this application that could be clarified in a telephonic interview, the Examiner is respectfully requested to initiate the same with the undersigned attorney.

Dated this 7TH day of August, 2006.

Respectfully submitted,



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To Translate Your Own Text

1. Type or paste text into the "Translate a block of text" text box.
2. Select the language pair from the list (for example, English to French).
3. Click the Translate button.
4. Babel Fish translates text up to about 150 words at a time

To enter special characters

To enter accented or Russian characters, click the World Keyboard link. An on-screen "virtual keyboard" will appear.

You can add characters to the text box by either clicking on the keys or typing with your physical keyboard. The World Keyboard link turns your physical keyboard into the international keyboard of your choice.

To return your physical keyboard to normal operation, just click the close box on the virtual keyboard. After you close the keyboard, press Control-k to use it again.

Tips:

- To enter accents, click first the accent and then the character it appears with. To type capital letters, click the Shift key and then the letter.
- Be sure your Windows control panel keyboard is set to English. The World Keyboard does not run on Macintosh computers.

To Translate a Web Page

1. Enter the address of the page you wish to translate into the "Translate a Web page" text box.
2. Select the language pair from the list (for example, German to English).
3. Click the Translate button.
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If you have copied a text passage that exceeds the 150-word limit, both the translation and the original text you pasted into the translation box will be cut off. Copy and paste in small sections and translate each section separately.

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